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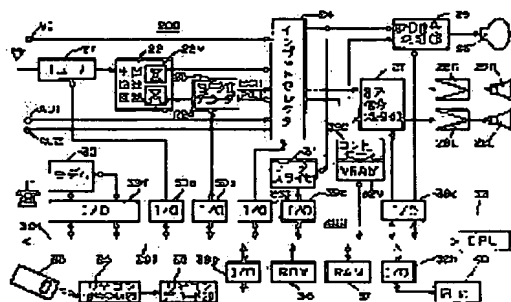
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(54) RECEIVER FOR BROADCASTING SIGNAL

(57)Abstract:

PURPOSE: To identify whether received broadcasting signal is one under broadcasting at present by comparing time information superimposed on the broadcasting signal with the present time.

CONSTITUTION: A two-way television program is presented to viewers by the image of a picture tube 26 and sounds from speakers 29R and 29L. Then, a response operation such as the selection input of the viewer is requested by a selection menu or sounds to be projected by data superimposed on the video signal. When there is the response operation, a control part 300 compares the time information in multiplex data fetched from an I/O port 39c with the preset time from a clock circuit 40. Then, it is discriminated whether both the time is matched or not or whether its difference is within prescribed time difference including the error of the clock or not. When both times match or the difference between both times is within a prescribed time difference, the reception of the two-way television broadcasting under broadcasting at present is discriminated. Then, the return destination is dialed through a modem 30, and the result selected by the viewer or the like is transmitted.



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CLAIMS

[Claim(s)]

[Claim 1] The receiving set of the broadcast signal which it has in an identification means by which the program with which compares a receiving means for the data containing a time entry to be the receiving set of the broadcast signal by which multiplex was carried out, and to receive the above-mentioned broadcast signal, and a means to extract the time entry by which multiplex was carried out to the above-mentioned broadcast signal with the time entry and the present time by which the extraction was carried out [above-mentioned], and the user is provided from the comparison result discriminates whether it is a thing under present broadcast.

[Claim 2] The above-mentioned identification means is the receiving set of the broadcast signal according to claim 1 from which the program with which the user is provided discriminates whether it is a thing under present broadcast by whether the difference of the time entry and the present time by which the extraction was carried out [above-mentioned] is predetermined within the limits.

[Claim 3] The broadcast signal with which multiplex [of the above-mentioned data] was carried out is the receiving set of the broadcast signal according to claim 1 or 2 which is a broadcast signal of interactive TV broadcasting.

[Claim 4] The receiving set of the broadcast signal which has an alarm means to output an alarm to an user when it has an input means to input the response to a both-directions program, in the receiving set of a broadcast signal according to claim 3, and there is response operation to the above-mentioned both-directions program by the above-mentioned input means, and the program with which the user is provided was not a thing under present broadcast and it is discriminated by the above-mentioned identification means.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is the receiving set of broadcast signals, such as interactive TV broadcasting, and it is related with the receiving set of the broadcast signal with which the program to which it is viewing and listening especially now discriminates whether it is a thing under present broadcast.

[0002]

[Description of the Prior Art] Conventionally, as an external-input terminal, in a television receiving set equipped with a video input terminal and a voice input terminal, a user can do input selection for example, by remote control operation, and can switch the television broadcasting input mode and VTR input mode. Thus, regenerative signals, such as VTR, are inputted from an external-input terminal, if it is the case where the input mode is switched, whether it is the video signal reproduced from that the program to which it is viewing and listening for the television receiving set is a thing under present broadcast which received by the tuner of self-equipment, or VTR can recognize a control section naturally, and it can discriminate it now.

[0003] However, when the regeneration video signal of VTR is changed into RF signal of the empty channel of a television receiving set and it considers it as the antenna input of a television receiving set by RF converter like [in the case of the television receiving set without a video input terminal], the technique which the signal under present viewing and listening cannot discriminate whether it is a television signal under broadcast, but discriminates certainly is not offered.

[0004]

[Problem(s) to be Solved by the Invention] When the regenerative signal of VTR is changed into RF signal of an unassigned channel and it considers it as an antenna input by RF converter as mentioned above, he will need be conscious of whether the program to which the viewer itself is viewing and listening is a thing under present broadcast, and it is troublesome for the viewer itself.

[0005] Moreover, in the television set which has an external-input terminal, although it can distinguish by the input mode whether it is under [present broadcast] *****, when VTR contains the tuner, a problem arises. That is, when the output of VTR is an output of not a tape regenerative signal but the built-in tuner, the program to which it is viewing and listening with the television set now cannot distinguish what received by the built-in tuner of VTR, and the thing which received by the tuner of self-equipment.

[0006] By the way, in TV shopping, the questionnaire, the viewer participation type quiz show, etc., by the television broadcasting side, only the time when the receptionist telephone number for the response is proper is expressed on a screen as a superimposition, and the interactive TV broadcasting which was made to perform the response from a viewer by the telephone or facsimile is proposed.

[0007] For example, since the information is quantitatively huge including bit map data etc. as technique of providing a viewer with informations, such as the reply place telephone number required for a response, in the interactive TV broadcasting on which the experiment is conducted in North America, in almost all cases, the technique of multiplexing and broadcasting with character multiplex system in the empty level term of the perpendicular blanking term of a video signal is adopted.

[0008] For example, this both-directions TV program is recorded on videotape with VTR, and if a

televiwer performs response operation to a response demand of the question offered according to this both-directions program recorded on videotape when it reproduced, views and listens to this both-directions program recorded on videotape after a broadcast end, for example, one week, the receiving set of a both-directions broadcast will start the reply send action for answering a broadcasting station side in the information on a response.

[0009] However, a reply of the response to a response demand of the question with which a televiwer is provided by the both-directions TV program is usually effective in many cases in the broadcasting hours of the both-directions program. That is, when, as for the response demand offered according to the both-directions program of the past recorded on videotape with VTR, a both-directions program becomes a past thing, the instancy, a sex disappears and the effectiveness of a response of the televiwer to this response demand of it is also lost.

[0010] Therefore, the response operation which a televiwer performs to the response demand offered according to the both-directions program of the past recorded on videotape with VTR is meaningless. And the reply operation which passes the telephone line of the response information from the receiving set of the both-directions broadcast made based on this response operation becomes useless, and accounting also of the telephone rate will be carried out vainly.

[0011] Then, in the receiving set of a both-directions television broadcasting signal, it is important for the signal to which it is viewing and listening to discriminate correctly whether it is a television broadcasting signal under broadcast now.

[0012] In view of the thing of a more than [invention / this], the program provided with instancy nature, such as both-directions television broadcasting, in the receiving set of an important broadcast signal now aims at offering the receiving set of the broadcast signal which can discriminate certainly whether it is a broadcast signal under present broadcast.

[0013]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the receiving set of the broadcast signal by this invention A receiving means 21 for the data containing a time entry to be the receiving set of the broadcast signal by which multiplex was carried out, and to receive the above-mentioned broadcast signal if the reference mark of the below-mentioned example is made to correspond, A means 31,300 to extract the time entry by which multiplex was carried out to the above-mentioned broadcast signal is compared with the time entry and the present time by which the extraction was carried out [above-mentioned], and the program with which the user is provided from the comparison result is characterized by having an identification means 300 to discriminate whether it is a thing under present broadcast.

[0014]

[Function] In the receiving set of the broadcast signal by this invention constituted as mentioned above, the time entry multiplexed by the input signal is extracted, and it is compared with the present time. If it is the time entry extracted from the broadcast signal of the program under present broadcast, it is equal to the present time, or has only few time difference which expected the error to be the present time. On the other hand, in the case of the regenerative signal from VTR, the time entry extracted from the regenerative signal has big time difference with the present time. Therefore, the thing or **** under present broadcast is certainly discriminated for the program with which the present user is provided from the comparison result of the extracted time entry and the present time.

[0015]

[Example] Hereafter, one example of the receiving set of the broadcast signal by this invention is explained, referring to drawing about the case of the receiving set of interactive TV broadcasting.

[0016] First, the interactive TV broadcasting of this example is explained. Interactive TV broadcasting offers the information about the input procedure and reply place for inputting the information on a response demand of a question etc., and a response etc. to the televiwer who received this multiplex television signal by transmitting the multiplex television signal which carried out multiplex [of the various informations later mentioned from a broadcasting station side].

[0017] The televiwer of interactive TV broadcasting performs alter operation of choosing the alternative to a question to the offered response demand based on the input procedure for inputting the information on a response, and creates an information on a response which is mentioned later. The information on the created response can be transmitted to the interactive TV broadcasting and real

time which offered the response demand through the telephone line at the reply place by the side of a broadcasting station. Moreover, it is transmitted based on the information about the reply place offered by the multiplex television signal of interactive TV broadcasting, and the information on the response from this televiewer can realize an automatic dial operation etc. by the telephone number of the reply place by which multiplex was carried out to the multiplex television signal etc.

[0018] This interactive TV broadcasting can consider the application to the program for which a sex is needed for the response from televiewers, such as a quiz show, TV shopping, a TV auction, and a questionnaire, instantly to television broadcasting.

[0019] In the interactive TV broadcasting used in this example, multiplex [of the various informations with which a televiewer side is provided during the perpendicular blanking of a video signal (vertical-blanking term)] is carried out, and they are things. An example of the data format of the program related information as a subbroadcast information on the interactive TV broadcasting by which multiplex is carried out to the perpendicular blanking term of a video signal is shown in drawing 3.

[0020] In drawing 3, 80 shows the whole video signal and consists of video-signal section 80a and perpendicular blanking term 80b. Multiplex [of the data multiplex 80c which is program related information] is carried out to intact 1 - 4 horizontal-scanning term of the perpendicular blanking term 80b. As shown in drawing 3, making multiplex like the lump of a program only in the perpendicular blanking term for one field cannot be finished [whose data multiplex 80c is], and multiplex [of a series of data multiplex] may be carried out over the perpendicular blanking term of two or more fields.

[0021] Next, the format of data by which multiplex is carried out to a television signal is explained. Data 80c shows the whole program related information by which multiplex is carried out to a video signal. If data 80c is roughly divided, it will be constituted by a time entry 81, the selection procedure information 82, the reply place information 83, and the note 84, and the selection procedure information 82 and the reply place information 83 will be divided into a still fine information.

[0022] A time entry 81 is data of the present time updated for every field. Drawing 4 is drawing showing each data which constitutes this time entry 81. A time entry 81 is constituted by data 81e and part data 81f and second data 81g at year data 81a, moon data 81b, Japanese data 81c, and day-of-the-week data 81d and the time.

[0023] As mentioned above, when multiplex [of a series of data multiplex] is carried out to the perpendicular blanking term of two or more fields, a time entry can transmit what was updated for every field. In the television broadcasting of the NTSC color TV system adopted in present Japan, the television signal of 60 fields is transmitted in 1 second. Therefore, it can update in the precision of a unit for 1/60 second second data 81g.

[0024] It is possible and multiplex can also be made to be carried out [to also carry out multiplex for every field, or] only to a required part by this time entry 81. Moreover, the precision of a hour entry can come out enough per 1 / 30 second unit, 1 / 20 seconds, and can also add a time entry 81 for every predetermined field like carrying out multiplex every every two fields and 3 field at a certain time. Furthermore, as mentioned above, it can also carry out multiplex so that multiplex [only of the time entry 81] may be carried out to each perpendicular blanking term and time precision may not be dropped only on one perpendicular blanking term, even if it is the case where it can carry out multiplex [of the data].

[0025] The selection procedure information 82 is like the lump of one program. It is the information which stimulates selection operation or controls selection operation of a televiewer to the televiewer of both-directions television.

[0026] In case selection procedure identification information 82a transmits a selection result, it is an identifier for judging at a reply place the thing to which question, which questionnaire item, and which quiz problem this selection result is by adding and transmitting to the reply information. Unless this information exists, decision of the thing to which response demand the data which it was late and were answered are can be performed.

[0027] Selection procedure 82b is a program which shows the televiewer of both-directions television a selection procedure. While the menu (constituted by an image display, a character string display, animation display, etc.) which requires selection operation of a televiewer is specifically displayed on the screen of a television set and a selection procedure is shown, the selection operation which the televiewer performed is received. It is the program which processes performing the inverse video and

blink display of alternative which were furthermore chosen to selection operation, or displaying messages, such as "a selection operation end", on a screen etc. In addition, not only a screen display but voice may be used together.

[0028] A display / voice data 82c are data, such as a graphic used by selection procedure 82b, an animation, a font, an animation, or voice. It is used by being called into the program execution described by selection procedure 82b.

[0029] When any operation is not carried out to the menu display which demands the effective time of a reply by the content of selection as which time-out information 82b is displayed by the identifier, and selection operation, either, the time of a time-out until it stops when stopping a display by the receiver side automatically is set up.

[0030] The information about the reply place of the response information generated by the selection operation whose televiewer of interactive TV broadcasting performed the reply place information 83, and the information about a communication environment are set up.

[0031] Communication setting information 83a is the setting related information of communication environments, such as specification of the check technique, such as the transmission speed when answering a letter, and a parity check, a setup of the existence of operation, and the modality of protocol, and a method of a modem, and the environment where a letter is answered in the response information from a televiewer is prepared based on the information specified here.

[0032] Telephone number 83b is the telephone number of a reply place, and when there is this telephone number, a televiewer does not need to do dial operation one by one, can perform an automatic dial by easy start operation, and can connect the telephone line with a reply place.

[0033] In addition, 82c in addition 83c, and the note 84 are established in consideration of future-extension nature, although it is usually intact, it can set each time and needed data can also be set up.

[0034] Multiplex [of the above data] is carried out to the perpendicular blanking term of a video signal, and they are transmitted from a broadcasting station. And a receiving set extracts and decodes the data by which receive this and multiplex was carried out, and sponsors a both-directions TV program. A televiewer will perform operation of making selection operation and a reply operation starting by a display of a television screen, or the audio output.

[0035] Next, the data answered through the telephone line from a televiewer side at the reply place by the side of a broadcasting station are explained. Drawing 5 shows the example of a format of the information on the above-mentioned response. When the information 90 on the response from a televiewer is roughly divided, it is constituted by the reply data identification information 91, the check data 92, the reply data 93, the reply place ID information 94, and the reply end-of-data code 95.

[0036] The reply data identification information 91 is located in the head of the information on a response in the reply place by the side of a broadcasting station as an identifier for distinguishing what depends on other accesses whether the transmitted data are an information on the response from a televiewer.

[0037] The check data 92 are for whether data are changing to the information on the response to the time of sending from a televiewer owing to transmitting omission, a noise, etc., and taking matching, and are constituted by data-length 92a and adjustment check data 92b. Data-length 92a shows the length of the data of the defined data format. Adjustment check data are data for a check used for a parity check, CRC (redundancy code check), etc.

[0038] The reply data 93 are constituted by selection procedure identification information 93a and selection result information 93b, and selection result information 93b is constituted by the selections information b1, the televiewer input data b2, the selection operation occurrence time b3, in addition b4.

[0039] Selection procedure identification information 93a is for the information on the response transmitted from a televiewer side distinguishing the response to which menu and which response demand it is. Thereby, according to the status of the telephone line etc., even when sending is overdue, whether it is an information on the response to which menu and which response demand can distinguish.

[0040] The selections information b1 is an information which shows the menu finally chosen by the televiewer and the item of a response demand. The televiewer input data b2 is data which the televiewer inputted by selection operation etc. The selection operation occurrence time b3 is the time when the user actually did response operation (selection operation) by remote control ***** 33 to the both-

directions program, and, thereby, can already judge the time of not the time of a response information reaching a reply place but a televiwer actually doing selection operation in push quiz.

[0041] Answering a letter agency ID94 can specify the televiwer who it is identification information peculiar to a televiwer, are the serial number of the receiving set of a television signal, a televiwer's telephone number, etc., and transmitted the information on a response by this. In addition, answering a letter agency ID is beforehand registered into the database of a reply place by the televiwer.

[0042] The reply end-of-data code 95 is a code which shows an end of the information on a response.

[0043] The above data are answered from a televiwer side through the telephone line to a broadcasting station side. And at the reply place by the side of the broadcasting station which received the reply, an extraction of a correct answer person, a total of a questionnaire result, etc. are performed, and the result can be immediately reflected in interactive TV broadcasting.

[0044] In the time broadcast, interactive TV broadcasting's reply from a televiwer is effective as mentioned above. However, when are recorded on videotape with VTR, and both-directions program related information is contained as it is during the perpendicular blanking and this interactive-TV-broadcasting program recorded on videotape is reproduced, the data by which multiplex was carried out to the television signal are extracted like the time of receiving the interactive TV broadcasting under broadcast, and it is provided for a televiwer.

[0045] Therefore, if the televiwer who viewed and listened to the program by the regenerative signal of the interactive TV broadcasting recorded on videotape with VTR does alter operation of the response to the response demand offered by regeneration with this VTR, he will be possible [transmitting a response information through the telephone line unnecessarily].

[0046] Then, it enables it to discriminate in this invention, without a televiwer being [the television program to which it is viewing and listening] conscious of whether it is the thing of the television signal under present broadcast certainly to the receiving set side of a television signal using the time entry by which multiplex is carried out to the broadcast signal as program related information.

[0047] The case of the receiving set of the interactive-TV-broadcasting signal which mentioned above one example of the receiving set of the broadcast signal by this invention is explained for an example using the drawing 1 and the drawing 2.

[0048] In drawing 1, 200 is the signal system of a television set and 300 is the control system.

[0049] In the signal system 200, the broadcast Hertzian wave received with the antenna is supplied to a tuner 21. A channel select signal is supplied, the broadcast signal of a desired channel is chosen as a tuner 21 from a control system 300 in this tuner 21, and it is changed into an intermediate frequency signal. This intermediate frequency signal is supplied to the intermediate frequency circuit 22. In this intermediate frequency circuit 22, video-signal-detector 22V and voice demodulator 22A are contained, and a video signal and an audio signal get over.

[0050] The video signal from video-signal-detector 22V is supplied to the video-signal processing circuit 25 through the input selector 24, and the output signal of this video-signal processing circuit 25 is supplied to the picture tube 16.

[0051] The audio signal from voice demodulator 22A is supplied to the voice multiplex decoder 23. In this voice multiplex decoder 23, a voice multiplex pilot signal is detected and it is detected whether it is stereo voice, double voice, or voice multiplex. And at the time of stereo voice, again, at the time of double voice, for example, a two language signal is decoded as keynote voice signal M and subsond signal S, respectively, and the stereo signal of a right-and-left channel is outputted. Moreover, the voice multiplex pilot detection output obtained at this time is supplied to a control section 300 through I/O Port 39b mentioned later, and it reports that it is multiplex broadcasting.

[0052] And the signals M and S from the voice multiplex decoder 23 are supplied to the sound signal processing section 27 through the input selector 24, respectively, and the output signal of this sound signal processing section 27 is supplied to the loudspeakers 29L and 29R on either side through amplifier 28L and 28R, respectively.

[0053] The video signal from the video-signal input terminal VI as an external-input terminal and the sound signal from the sound signal input terminals AU1 and AU2 are supplied to the input selector 24. It is decided with the control signal according to input selection operation of the user from a control section 300 whether by this input selector 24, the video signal from whether the video signal from the intermediate frequency circuit 22 and the sound signal from the voice multiplex decoder 23 are chosen

and the external-input terminal VI and the sound signal from the external-input terminals AU1 and AU2 are chosen. In drawing, the control signal is supplied to the input selector 24 through 39g of I/O Ports. [0054] The video-outlet terminal of VTR, an audio output terminal, the video-outlet terminal of a videodisk player, and an audio output terminal are connected to the external-input terminals VI, AU1, and AU2.

[0055] And in the case of this example, the video signal from the input selector 24 is supplied to the data slicer 31. This data slicer 31 extracts the both-directions program information by which multiplex was carried out to the perpendicular blanking term of a video signal, changes it into a digital signal, and is inputted into a control section 300 through I/O Port 39c. For this reason, the data slicer 31 is equipped with the gate circuit for extracting the signal of the level section where multiplex [of the both-directions program information] is carried out from a video signal, and the slicing circuit which changes into a binary-sized digital signal the signal which carried out the gate.

[0056] A control section 300 is constituted by the microcomputer, it has CPU38, program ROM36, RAM37 for work areas, and I/O Ports 39a, 39b, 39c, 39d, 39e, 39f, 39g, and 39h, and these are connected through the system bus 301.

[0057] Moreover, Video RAM 32V are connected to the system bus 301. Display-controller 32C is prepared to Video RAM 32V. This display-controller 32C changes the read video data into an analog video signal while it controls read-out and the writing of a video data to Video RAM 32V. And the analog video signal obtained from this display-controller 32C is supplied to the video-signal processing section 25, and multiplex is conjointly carried out to a video signal from the input selector 24 with a control of the video-signal processing section 25 from a control section 300, or it is switched and compounded.

[0058] While various kinds of control programs besides the incorporation processing program of the subbroadcast information on the above character multiplex formats are stored, the data of a font or a graphic used for a display are also stored in ROM36. Moreover, own setting information, own ID information, etc. of a receiving set are saved at ROM36. RAM37 is mainly used as a working area for an operation. And Video RAM 32V are used for a display.

[0059] Moreover, the remote control decoding section 35 is connected to the system bus 301, and it is received by the remote control signal receive section 34, and for example, the infrared remote control signal from remote control ***** 33 is decoded in the remote control decoding section 35, and is inputted into a control section 300.

[0060] A modem 30 performs a modulation recovery of communication data, and is connected to the telephone line connected with a telephone network. Moreover, it is also possible to connect a telephone terminal through this modem 30, and this modem 30 is equipped with NCU (network control unit) which switches the reply to a both-directions TV program, and the communication by use of a telephone terminal.

[0061] 40 is a clock circuit built in this receiving set, in order to offer the exact present time. This clock circuit is equipped with the so-called calender function, for example, carries out dividing of the oscillation output of the VCO using the quartz resonator, and this VCO, and is equipped with a part and the counter which acquires the information on a second at a year, the moon, a day of the week, a day, and the time. And the information on a part and a second is inputted into a control section 300 through 39h of I/O Ports at a year, the moon, a day of the week, a day, and the time.

[0062] Next, in the receiving set of a configuration of having mentioned above, the operation at the time of a reception of a both-directions program is explained.

[0063] The video signal outputted from the input selector 24 is incorporated by the control section 300 through I/O Port 39c, the data slicer 31 being supplied, the data (related information of a both-directions program) by which multiplex is carried out to the video signal being extracted, and being used as a digital signal while it is supplied to the video-signal processing section 25, as mentioned above.

[0064] And the menu which directs a selection procedure with this data is displayed on the picture tube 26, or designation of the input by voice is carried out. At this time, the information on a reply place and the information for the communication environment for a reply are recorded on RAM37.

[0065] In this way, a televiewer is provided with a both-directions TV program by the picture which the picture tube 26 projects, and the voice outputted by loudspeakers 29R and 29L. And as mentioned above, response operation of a televiewer's selection input etc. is demanded with the selection menu and voice which the data by which multiplex was carried out to the video signal project.

[0066] Response operation of a selection input etc. is performed by remote control ***** 33, and the televiewer corresponding to this is supplied to the remote control signal receive section 34 as a remote control signal. And it is decoded by the remote control decoding section 35, and the decoded content is inputted into a control section 300 through I/O Port 39e. The content of the selection input operated by remote control ***** 33 etc. is displayed on a menu screen. For example, a display of the inverse video of the alternative which carried out the selection input being carried out is carried out.

[0067] And when there is response operation, a control section 300 compares with the present time of the clock circuit 40 the time entry in the data multiplex incorporated from I/O Port 39c, and both time distinguishes whether the difference of a correspondence or both time is less than predetermined time difference that expected the error of a clock. And it will distinguish, if both time is the cases where it has received the interactive TV broadcasting under present broadcast when the difference of a correspondence or both time is less than predetermined time difference, and a reply place is dialed through a modem 30, and the selection result which the televiewer performed is transmitted.

[0068] On the other hand, if the output signal from the input selector 24 compares with the present time of the clock circuit 40 the time entry in the data multiplex which incorporated the external-input terminals VI, AU1, and AU2 from I/O Port 39c when it was the regenerative signal of the both-directions TV program passed for example, recorded on videotape with VTR, both time will be inharmonious and will become what was far apart more than predetermined time. Thereby, even if it will be distinguished if the program under present viewing and listening is not a program under present broadcast, and it has response operation of a televiewer at this time, it is controlled by the control section 300 not to perform sending of a response information. Moreover, the alarm of a purport by which a response is not received is emitted by the televiewer.

[0069] In addition, even if it is a signal from VTR which passed the external-input terminals VI, AU1, and AU2, it may be the output of not a regenerative signal but the built-in tuner of VTR. At this time, when the time entry obtained from the data multiplex extracted with the data slicer is compared with the present time of the clock circuit 40, both will be correctly discriminated, if the program with which the televiewer is provided then is a program under present broadcast, since the time difference of a correspondence or both becomes in predetermined time.

[0070] That is, even if it is a signal from an external-input terminal, like [in case it is a signal from the built-in tuner of VTR], if it is a program under present broadcast, it will be recognized correctly, and if it is a both-directions program, the reply send action of a response will be performed.

[0071] It is the flow chart of the control action of the control section 300 which, as for drawing 2, the broadcast signal received as mentioned above judges certainly whether it is a broadcast signal under present broadcast, and controls sending of a response information to a both-directions program.

Drawing 2 is explained below.

[0072] It is supervising whether the reply request to interactive TV broadcasting generated the control section 300 (step 101). The televiewer who is viewing and listening to a both-directions TV program chooses the answer of the problem set by for example, the both-directions program according to a selection procedure, and if the depression of the reply key for answering a letter in a reply is carried out, a start demand of a reply operation will occur. If a start demand of this reply operation is detected, it will progress to step 102 from step 101, will be extracted by the data slicer 31, and will detect whether the time entry (TT) is contained in the data multiplex decoded by the control section 300 (step 102).

[0073] When a time entry (TT) exists in a data multiplex, the present time RT is read in the built-in clock circuit (RTC) 40 (step 103). And time-entry TT and difference T with the present time RT from the clock circuit 40 are calculated (step 104), and it judges whether absolute value $|T|$ of difference T is within the limits of predetermined (step 105). A predetermined domain is set up in about $**2 - **3$ minutes in consideration of the error of the clock circuit 40. In this step 105, if the absolute value of difference T of time is within the limits of predetermined, processing of a reply operation, i.e., sending through the modem 30 of a response information, will be started (step 106).

[0074] In step 102, when there was no data multiplex, or there was no time entry into a data multiplex and it was distinguished, and when the absolute value of predetermined of time difference T is out of range in step 105, the warning message of "being unable to answer" is displayed on the picture tube 26,

or beeping is outputted from loudspeakers 29R and 29L (step 107). And the send action of a response information is not made to start.

[0075] In addition, in the example of drawing 1 and the drawing 2, it provided by the clock circuit 40 where the receiving set contains the present time. However, since it has the modem 30, if the receiving set of the example of drawing 1 has the time signal service office which performs the time signal service by digital data, for example, it can communicate through a modem 30 and the telephone line to this service office, can obtain the present time entry from this service office, and can also compare it with the time entry extracted from the data multiplex.

[0076] Moreover, in drawing 2, as for the program to which it is viewing and listening, it discriminated whether it was a program under broadcast by whether the difference (T) of a time entry (TT) and the present time (RT) is within the limits of predetermined. However, when there was the exact present time entry from a time signal service office which performs the time signal service by digital data as mentioned above and the time entry of this time signal service office and the time entry contained in a data multiplex from the broadcasting station of a precision equivalent to this are in agreement, you may be made to judge that it is viewing and listening to the program under present broadcast.

[0077] Moreover, in order to always hold the time of the built-in clock circuit 40 correctly, the key for time retouch is prepared, and when this key is operated, it calls to a time signal service office automatically, and the time entry from the above-mentioned time signal service office may be made to perform time correction.

[0078] In addition, it is possible to display the time entry by which multiplex is carried out to a broadcast signal on at any time at the picture tube 26 always or if needed (for example, superimposed title etc.). Thus, when the time entry extracted from the signal of the program under viewing and listening is displayed on a screen, the display time of this screen to the user has the program possible also for recognizing whether it is a program under present broadcast under present viewing and listening.

[0079] And the key which makes time doubling of the built-in clock circuit 40 the time entry extracted from the broadcast signal can be prepared in for example, remote control ***** or a receiving set, this time doubling key can be operated, and the clock circuit 40 can be doubled with the exact time which always suited at the time entry of a broadcasting station. At this time, it is good to check that it is the time entry extracted from the program under present broadcast by the time stamp of the aforementioned screen.

[0080] Moreover, it is also possible it to be also possible for to display the program source under "television", "video", etc. and present viewing and listening on the picture tube 26 by the comparison result of the present time RT which the time-entry TT [of a data multiplex] and clock circuit 40 offers, to display these displays by a televiewer's operation, further, when required, and for it not to be made not to make it display then, either other than this.

[0081] In addition, in the multiplex broadcasting in case the data by which multiplex is carried out not only to interactive TV broadcasting but to a broadcast signal which was mentioned above are data which accomplish a meaning in the time broadcast, the receiving set of the broadcast signal by this invention is effective.

[0082] And in order to carry out multiplex [of the data] as a voice multiplex subsound signal or to convey a data multiplex, it can correspond only by changing an extraction of a data multiplex, and the fraction of decoding also in the case of the multiplex broadcasting which uses the video signal as a main broadcast signal, and the signal of the band other than a sound signal.

[0083] Furthermore, the receiving set of the broadcast signal according to this invention also by the case of a radio broadcasting, a sanitation broadcast, and a CATV broadcast is effective. At the time of CATV, sending of a response can be performed through a both-directions cable.

[0084]

[Effect of the Invention] It can view and listen, without the program with which the user is provided being conscious of the program under present broadcast, and the program reproduced with VTR etc. according to this invention as explained above. And at the time of a both-directions program, while viewing and listening to the program reproduced with VTR etc., it can control not to perform reply operation, even if it carries out reply operation accidentally.

[0085] Moreover, since the reply operation to the both-directions TV program by the malfunctioning is prevented and use of the telephone line for an unnecessary reply operation can be prevented, the load

of the telephone line is mitigated and it also becomes saving of a useless telephone rate.
[0086] Furthermore, since according to this invention the time entry by which multiplex is carried out to the broadcast signal is compared with the present time and it discriminated whether it was a program under present broadcast, while viewing and listening to a both-directions TV program, for example using the built-in tuner of VTR, it can participate in a both-directions TV program.

[Translation done.]

* NOTICES *

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of one example of the receiving set of the broadcast signal by this invention.

[Drawing 2] It is a flow chart for explaining an operation of one example of the receiving set of the broadcast signal by this invention.

[Drawing 3] In the interactive TV broadcasting used by explanation of the example of drawing 1 , it is drawing showing the example of the format of data by which multiplex is carried out to a broadcast signal.

[Drawing 4] In the interactive TV broadcasting used by explanation of the example of drawing 1 , it is drawing for explaining the time entry by which multiplex is carried out to a broadcast signal.

[Drawing 5] In the interactive TV broadcasting used by explanation of the example of drawing 1 , it is drawing showing the example of a format of the reply data answered from a televiewer side.

[Description of Notations]

- 21 Tuner
- 22 Intermediate Frequency Circuit
- 23 Voice Multiplex Decoder
- 24 Input Selector
- 25 Video-Signal Processing Section
- 26 Picture Tube
- 27 Sound Signal Processing Section
- 28R, 28L Amplifier
- 29R, 29L Loudspeaker
- 30 Modem
- 31 Data Slicer
- 32 Video RAM
- 33 Remote Control
- 34 Remote Control Signal Receive Section
- 35 Remote Control Decoding Section
- 36 ROM
- 37 RAM
- 38 CPU
- 40 RTC
- 300 Control Section

[Translation done.]